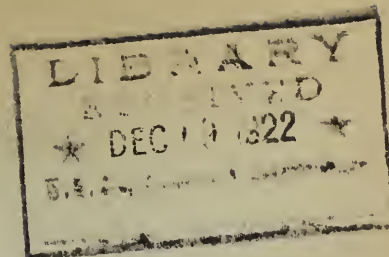


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THE AGRICULTURAL SITUATION IN RUMANIA
With Special Reference to Cereal Production

By

Louis G. Michael,
Consulting Specialist.

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THE UNIVERSITY OF CHICAGO

DEPARTMENT OF CHEMISTRY

THE AGRICULTURAL SITUATION IN RUMANIA

With Special Reference to Cereal Production

by Louis G. Michael, Consulting Specialist.

Introduction.

The old Kingdom of Rumania, before its participation in the Great War, comprised the geographical divisions of Moldavia, Wallachia, Dobrudja and Oltenia, having in 1912 an area of 50,260 square miles,⁽¹⁾ or slightly less than that of the State of Alabama. The Old Kingdom lies between the 43rd and the 49th parallels of north latitude and the 22nd and the 30th meridians of east longitude. It is bounded on the north and west by the Transylvanian Alps and the Carpathian Mountains, on the south by the Danube River and Bulgaria, and on the east by the River Prut and the Black Sea. The climate is strictly continental. There is normally a sufficient precipitation in winter and spring followed by hot dry weather in the summer, making this country an unusually good wheat producing region. In the mountain foothills there is some rough land which cannot be cultivated, but the larger part of Old Rumania is made up of rolling plains along the two boundary rivers. The soil of these plains is a deep black loess, similar to that in Iowa and Illinois.

(1) By the Treaty of Bucharest in August 7, 1913, Bulgaria ceded to Rumania the districts of Durostor and Caliacra, south of Dobrudja, with a combined area of 2,983 square miles, making the total area of Rumania at the outbreak of the World War 53,243 square miles. (The Statesman's Year Book gives the areas of the two districts acquired from Bulgaria as 2,969 square miles, and the total pre-war area of Rumania as 53,439 square miles, and its population in 1914 as 7,771,341-Editor.)

Before the war Rumania was, in proportion to its production one of the heaviest cereal exporting countries in the world. In the five years 1909-1913, it exported approximately 59.3 per cent of its wheat crop, 73.8 per cent of its rye, 62.2 per cent of its barley, 37.0 per cent of its oats, and 36.9 per cent of its corn. It was thus no inconsiderable competitor of the United States in the grain markets of Western Europe.

By the Treaty of Versailles, the boundaries of the kingdom have been extended east, west and north, so that its territory has been more than doubled. Bessarabia was acquired from Russia; Bukovina from Austria; Transylvania, including portions of the Banat and Crisana and part of Maramuresh from Hungary.

The relation of these newly acquired districts to those of the Old Kingdom are shown in the following table.

Table 1. Character of Land Areas in Greater Rumania Areas in Acres (000 omitted)					
Utilization of Land	Old Kingdom 1911-15	Transylvania 1919	Bessarabia 1902-11	Bukovina 1909-13	Greater Rumania
Arable Land	14,681	8,118	7,528	712	31,039
Meadow Land	1,424	3,107	175 (1)	326	5,032
Vineyards & Orchards	399	131	154	20	704
Forests	6,171	9,006	658	1,115	16,950
Pasture Lands	2,658	3,111	583	319	6,671
Non-agricultural	8,743	1,780	995	88	11,606
TOTALS	34,076	25,253	10,093	2,580	72,002

(1) Estimated on basis of 1919 data. Included with Pasture lands in 1902-11 Reports.

The total area of Rumania has been more than doubled as a consequence of the annexations, and what is more significant, the area which can be seeded to field crops has been more than doubled. The following table shows the approximate areas devoted to each of the principal field crops in the pre-war period.

Table 2. Areas Seeded to the Principal Field Crops Areas in Acres (000 omitted)					
Crop	Old Kingdom (1911-15)	Transylvania (1) 1910-14	Bessarabia 1902-11	Bukovina 1909-13	Greater Rumania (Estimate)
Wheat	4,763	2,352	1,939	48	9,102
Corn	5,181	2,393	1,738	158	9,470
Barley	1,331	325	1,318	83	3,057
Oats	1,069	772	155	118	2,114
Rye	242	305	522	67	1,136
Millet	112	5	14		131
Buckwheat	1	2	6	3	12
Rape, Flax, etc.	235	100	118	23	476
Legumes	206	97	45	36	384
Forage, etc.	1,540	1,529	1,674	176	4,919
Total	14,680	7,880	7,529	712	30,801

(1) The acreage seeded to the five chief cereals is taken from the Statistical Bulletin of Rumania for 1922. The remaining figures for Transylvania are estimates obtained by subtracting the totals for the Old Kingdom, Bessarabia and Bukovina from the total in the final column, which is taken from the "La Roumanie Economique."

From this table it is apparent that the areas which, under normal conditions before the war, were seeded to wheat, corn, barley and oats have been nearly doubled. The area normally seeded to rye has been quadrupled. But, not only have the cereal areas been increased, the population also, both urban and rural, has been more than doubled. The percentage of city dwellers has risen from 13.14 in the Old Kingdom to 20.59 in Greater Rumania. This means an increase in the number of bread consumers at a greater rate than the increase in the number of grain producers. This pro-

portionate increase in the urban population is largely due to the acquisition of the industrial areas of Transylvania. The following table shows the urban and rural population of the larger divisions of Greater Rumania:

Table 3
Urban and Rural Population of Rumania

Division	Urban	Rural	Total	Per cent Urban
Old Kingdom	1,432,572	6,464,739	7,897,311	18.14
Transylvania	1,402,127	3,806,218	5,208,345	26.92
Bukovina	170,461	641,260	811,721	20.96
Bessarabia	343,700	2,001,100	2,344,800	14.66
Totals	3,348,860	12,913,317	16,262,177	20.59

Rumania has always depended upon the export of grain as the chief means of maintaining its foreign trade balance. At first sight, it might seem that the acquisition of these new territories, with a doubling of the area under cereals, would give Rumania the possibility of doubling her grain exports. But as will be seen later the greater increase in the bread consuming population, together with the land reform which has changed the agricultural habits of the peasants, have so far resulted in a sharp decrease in the surplus of cereals available for export.

Bessarabia, lying between the rivers Prut and Dniester, is a rich black soil province, which, before the war, produced a surplus of all cereals. This surplus, equalling 50.1 per cent of its total production was exported to western Europe through the Russian port of Odessa. Under normal conditions these excess cereals will now find their way into export trade through the Rumanian ports of Galatz and Sulina. However, due to changes in the land tenure system, it is probable that Bessarabia will

cease to produce a surplus of wheat for export, though its surplus of barley and oats will be nearly doubled.

Bukovina, with only 712,000 acres of land under plow, is a cereal deficit area. A large proportion of its population is composed of bread eaters, whereas in the Old Kingdom the peasants ate very little wheat and rye, confining their diet largely to corn. In Bukovina therefore more wheat and rye are consumed than produced.

The present Rumanian province of Transylvania is made up of the old Hungarian districts of: I. Transylvania, which being an industrial region did not normally produce as much wheat and rye as its population consumed; II. Maramuresh, lying to the north of Old Transylvania, made up of parts of three Hungarian districts, which on an average did not produce as much grain as they consumed; III. Crisana, lying to the west of Old Transylvania, which is made up of parts of the two surplus grain producing districts of Arad and Bihor and of the nearly neutral district of Salagin; IV. Part of the Banat. The Banat was partitioned among Hungary, Yugoslavia and Rumania. Rumania received parts of two rich cereal districts, which she has now combined into one district called Timis-Torontal; and one deficit district in the Transylvania iron and coal region. All these deficit districts produced some wheat, so, had social and economic conditions remained as before within Greater Rumania, the surplus producing districts would have been able theoretically to produce enough wheat to balance the deficit in the rest of Transylvania. If we divide the amount of wheat consumed by all of New Transylvania by the amounts required for food and seed, we get the percentage factor 1+3 per cent. This factor indicates in a single number the relation between production and consumption.

indicating that the province produced nearly fifty per cent more wheat than it consumed. If we should calculate similar factors for the various districts and plot them on a map of Rumania we would find that the country is divided into two important areas of surplus and a large and a small area of deficit. The greater surplus area includes most of the Old Kingdom and all of Bessarabia, and the smaller surplus area includes the extreme western part of the country, beginning in the western Banat at the Yugoslavian boundary and extending northeast through Crisana and the western half of Maramuresh to the Czechoslovakian boundary. The greater deficit area begins at the Danube River in the eastern Banat and extends irregularly north and east along the mountain ranges to Bukovina. In the center this deficit area broadens out to the west to include all the industrial districts of Transylvania. The smaller deficit area includes the delta of the Danube in the northern part of Dobruja. In the surplus districts the ratio between production and consumption runs from 101 in a district just south of the Transylvanian Alps to 537 in the western Banat. The districts along the Danube in Southern Wallachia and Oltenia show ratios of from 333 to 462. In the deficit areas the ratios in the mountain districts run as low as 5 to 15, while in the Eastern Banat the ratio is 37 and in industrial Transylvania 88. (1)

(1) In calculating these ratios for Transylvania and Bessarabia, the Hungarian and Russian norm of 5.14 bushels per capita per year was used. For Bukovina and the Old Kingdom, the Rumanian norm was employed - city dwellers 13.23 bushels, country dwellers .26 bushels, seed 3 bushels per acre. The percentage factors for the Old Kingdom are based upon the 1911-15 average for production, and for consumption on the population in 1914. The populations for the other provinces were furnished by the Central Statistical Bureau in Bucharest. The production for Transylvania is the average for the years 1911-14 as given in "Agricultural and Seeding Conditions in Hungary" published by the Department of Agriculture in Budapest. The production for Bessarabia is the average for the years 1902-11 as given by the Central Statistical Bureau in Petrograd. The production for Bukovina is that of the year 1907.

The deficit areas particularly in Transylvania recede up into the foothills in good crop years while in unfavorable years they extend down into the valleys. Grain must necessarily flow from the surplus to the deficit areas, and, under normal conditions, with a surplus in the whole of Rumania, there must be a considerable exportation. There were in the Old Kingdom before the war only three areas having a normal wheat deficit. These were: (1) The district of Neamtu lying in the foothills of the Carpathians that required only 12,000 bushels of wheat to make up its yearly shortage; (2) The district of Muscel in the foothills of the Transylvanian Alps, which required 200,000 bushels to satisfy its deficit; (3) The district of Tulcea including the marshy flats of the delta of the Danube, which required only 200,000 bushels yearly over and above what it produced. Each of the other 31 districts produced on an average, grain for export.

After the war the first Rumanian crop report is that of the year 1919. This is for the Old Kingdom only, there being no detailed statistics relative to the harvest for that year in Transylvania, Bessarabia, or Bukovina. However, assuming the same consumption norms for the various districts as in the pre-war period, with the wheat production of 1919, we find that there are fifteen deficit districts in the Old Kingdom and with only three exceptions, the surplus for export has been greatly reduced in all the other districts. Many factors have contributed to this drop in production but the one factor having the most pronounced effect and which will probably influence Rumanian agriculture and particularly wheat production permanently, was the change in the land tenure system inaugurated by the decree of King Ferdinand on December 16, 1918.

The Land Reform

To understand the changes that are taking place in the agricultural system of Greater Rumania, it is necessary to look back briefly at the situation in Rumania before the Great War. Of the 7,771,341 inhabitants of the Old Kingdom in 1914, 6,371,598 or 82 per cent, lived in agricultural communities. Each of these communities was a large or small group of huts surrounded by the fields which the peasants cultivated. In some cases such a village was the center of a very large agricultural area extending in some directions as far as ten miles from the center of the village. Only 18 per cent of the population of the Old Kingdom lived in cities and towns not primarily agricultural.

The total area of the Old Kingdom of Rumania in 1913 before the Treaty of Bucharest was 32,166,737 acres, of which 1,994,838 acres were covered by water and 5,526,977 acres were non-agricultural lands including mountains, waste lands, cities and towns. The total productive area was, therefore, 24,664,922 acres, of which in 1913, 5,639,563 acres were in forests; the remaining 19,005,359 acres comprised the permanent pastures, vineyards, orchards, and cultivated lands. This latter area had remained quite constant for generations; thus in 1864 we find it to be 19,340,013 acres, at which time 3,367,313 acres were owned by peasants while 15,972,700 remained in the control of the Crown and a very few great landlords.

The peasantry was made up of those who during the ages past had been the fighting men who had collected around the great lords and "boyards". In exchange for the lord's protection to their families, they placed themselves at his disposal in times of war. In times of peace they were allowed by him to till his lands, receiving from him a portion of the harvest.

As time went on these workers' families became more or less attached to one or more of the great estates. A few of them acquired small plots of ground, but the greater part were, until 1864, practically slaves.

Dr. G. Ionescu-Sisesti, the present Director of Agriculture, writes as follows in "Rumaniens Bauerliche Landwirtschaft: "

When the peasants were "freed" in 1864 they did not receive enough land to support their families and to meet the instalments on the cost of their holdings. They were, therefore, obliged to turn again to the landlord and either rent from him additional land or work for him on shares or for a wage. As a part of the compensation for the liberation of their serfs, the landlords had been given at that time a clear title to the lands which he had formerly held as a tenant of the State. The new landlord desired that the peasant should work for a wage, but they themselves had little capital, little machinery and little livestock. They could not farm at all without the help of the peasants, his animals, his plows and wagons, so in the very beginning of this new agricultural system, the interests of the landlords and the peasants were set in opposition.

The relationships between the peasants and the landlords became very complicated and many curious systems developed; for example, first, in his need, the peasant had to borrow money from the landlord as an advance against his summer wages, in which case he became virtually the slave of the landlord; second, when the peasant did not have cash to pay a rental the lord charged the highest possible rate; third, if the peasant paid his rent with labor the rent price was placed too high and his wages too low; fourth, when the landlord let land on shares not only would he take, by agreement, from one-half to one-third of the crop but the peasant must also do a certain amount of work on the lord's other fields; fifth, the peasant was often granted the right to work a certain piece of land, taking all the yield, on the condition that he work an equal piece for the landlord. In such cases the peasant's plot was under-sized and the landlord's was oversized. In all cases the peasant was obliged to do the landlord's work first and his own when he could. If the peasant refused to do the work required by the landlord, he was frequently forced to do so by the State as though it had been military service, or, as a penalty, he was not allowed to use the roads that passed through the estate to haul his crops to market. Often these roads were the only ones in the district. In other cases the peasants were not allowed to use the foot-paths across the fields of the estate. When they complained, laborers were brought in from Russia, Bulgaria and Serbia until the peasants were forced by hunger to make terms. Pasture lands remained in the hands of the estate and also the water in places. The peasant was not allowed to pasture his stock without paying with both work and money.

This condition was responsible for the peasant uprising in 1907. At this time several reforms were instituted: the villages bought the pasture lands to be held in common, and the rural bank was reorganized for the purpose of extending credit to the peasant. These reforms, however, did not include any additional grants of land, and the peasants were still obliged to depend upon the landlords as before, and the old abuses were resumed. It was not until 1918, near the close of the Great War, that a genuine land reform was put into effect.

Previous to this final land reform 7,790 heads of families, or .3 per cent, owned 50.4 per cent of the land, while the peasant population, comprising 950,257 heads of families, or 99.2 per cent of the total number, owned 49.5 per cent of the land. Of the 19,340,013 acres thus owned 4,907,833 acres were in permanent pastures, orchards, vineyards, woodlands, lands subject to inundations, etc., leaving 14,432,175 acres under plow in the year 1913.

The way in which this land was owned and operated, as indicated in the following table, gives the key to the reforms that have brought about the present agricultural situation.

Table 4. Land Tenure in Rumania in 1913 Cultivated Land Areas in Acres.				
Number of Heads of Families	Area of Holdings	Area owned by each class (000 omitted)	Area rented by each class (000 omitted)	Total area operated by each class (000 omitted)
	<u>Peasant Holdings</u>			
476,649	Less than 2	1,042	372	1,414
441,336	2 - 5	2,584	1,237	3,821
161,550	5 - 10	1,600	1,164	2,764
42,996	10 - 25	980	557	1,537
5,697	25 - 50	349	128	477
1,554	50 - 100	184	81	265
1,129,782	Less than 100	6,739	3,539	10,278
	<u>Large Estates</u>			
2,377	100 - 500	697	755	1,452
1,043	More than 500	1,225	1,477	2,702
3,420	More than 100	1,922	2,232	4,154

Such a condition of affairs could not continue, and on the 16th of December, 1918, the long promised reform was initiated by the decree of Ferdinand I, expropriating 5,496,957 acres of the large estates. The history of land reform in Rumania is concisely shown in the following table.

Table 5.
Land Reform in Rumania
Areas in Acres (000 omitted)

	Large Estates	Small Holdings
Situation in beginning of 1864	15,973	3,367
In 1864, 456,461 families received		4,717
In 1881, 6,686 " "		77
In 1889, 106,714 " "		1,351
The Rural Bank sold		48
In 1912, the peasants received		31
In 1919, " " "		438
Situation in 1919	9,310	10,029
Land Expropriated under Decrees Act 3697 - 1918		
From 3,680 Private Owners		4,942
" 25 Absentee Landlords		103
" 61 Foreigners		255
" 739 Persons, Societies and Institutions		1,026
" 283 State Domains		396
Situation after Expropriation	2,589	16,751
Total Number of Acres involved	19,340 ⁽¹⁾	

(1) This total does not include the lands expropriated in the districts of South Dobrudja.

The foregoing table furnished by the "Centrala Obstilor Statesti", a division of the Department of Agriculture (in charge of agrarian reforms) shows about 1,200,000 more acres to be expropriated than provided for by the decree of the 16th of December, 1918. This discrepancy is accounted for in the following manner: according to the letter of the act on which the land reform was based, the size of the estates to be retained by the large owners was fixed at 494 acres in districts of dense population, at 741 acres in districts of medium density of population and 1,236 acres in districts of sparse population - the so-called colonization districts. Many estate owners, however, had estates in more than one district, and it was found that often the total holdings of such owners were more than 1,236 acres. To remedy this, additional land is being expropriated so that the total held by one family will conform to the spirit of the original act.

The Liberal Government had planned to hold these expropriated estates under government control and to operate them through the medium of cooperative societies. The peasants, however, protested against this and forced the division of the land into holdings of from 12 to 47 acres per family according to the density of the population. The peasants demanded actual possession of the land, and where disturbances proved serious the government hastened the process of making the transfer, but on the whole this has been a very slow process, and a proportionately small amount of land has been turned over into the actual possession of the peasants.

According to the present arrangement the peasant is allowed twenty years in which to pay for his land, paying only the capital sum. The interest is paid by the government to the former owner, who has received for

the land taken from him, bonds payable in full at the end of twenty years. The premium amounting to the interest for twenty years is paid to the peasant who pays for his land at the time of the transfer. In Bessarabia the land retained by the estate owner is fixed at 247 acres; in Transylvania and in Bukovina the maximum is 1,235 acres. In addition the estate owner is allowed to retain certain vineyards, orchards, etc. Land subject to inundation has not been expropriated.

On account of the disturbed condition resulting from incomplete transfer of the expropriated land, many large areas have not been cultivated either by the estate owners or by the prospective peasant owners. When the change is finally complete, its effect upon the agriculture of the country will be considerable. In general it is probable that wheat productions will be cut down and corn production will be somewhat increased. In order to understand this situation it will be necessary to consider the relative importance of the main cereal crops in Rumania under pre-war conditions.

Cereal Production in the Old Kingdom of Rumania

With the area of cultivated land practically fixed and the manner of land tenure and rental following a rigid system, it is not surprising that the seeding of certain areas to the principal cereals had, before the war, settled down to a rather constant routine. This is clearly indicated by the following table in which the average acreage seeded to the principal cereals is shown by five-year periods.

Table 6
Areas Seeded to Principal Cereals
Five-year Moving Averages
Areas in Acres (000 omitted).

Period	Wheat	Corn	Barley	Oats	Rye	Total ⁽¹⁾
1906-10	4,535	5,011	1,377	1,065	389	12,542
1907-11	4,489	5,013	1,352	1,075	364	12,449
1908-12	4,665	5,083	1,347	1,090	344	12,646
1909-13	4,576	5,150	1,319	1,105	316	12,531
1910-14	4,785	5,122	1,328	1,077	290	12,705
1911-15	4,763	5,131	1,331	1,069	242	12,701

(1) Includes Millet and Buckwheat.

The Rumanian peasants are corn eaters, consuming about 12.2 bushels per capita per year. Their consumption of wheat is almost negligible, amounting to only one-fourth of a bushel per capita per year. The city dwellers, on the other hand, except the poorer classes, consume practically no corn. According to government estimates, the per capita

consumption of wheat in the cities is 13.23 bushels per capita per year.

Taking the 1914 population as a basis for calculation we find the food requirements of the Old Kingdom for the city and country populations for one year to be: Wheat, urban population (1,399,643) at 13.23 bushels per capita, 18,500,000 bushels; rural population (5,371,598) at .26 bushels per capita, 1,700,000 bushels, making a total of 20,200,000 bushels for the whole of the Old Kingdom: Corn, rural population at 12.2 bushels per capita, a total of 77,733,000 bushels. With an average production (1911-15) of 31,000,000 bushels of wheat and 119,000,000 bushels of corn,

it is evident that corn is grown largely by the peasants for food while wheat is grown for export. (1) The area seeded to corn must be maintained at a certain minimum to feed the masses. Should there be a shortage in the crop, corn must be imported, as the peasants are not accustomed to making wheat and rye bread. Their staple diet consists of a thick corn meal mush - "mamaliga."

After the Central Powers had withdrawn in 1918, agricultural operations were resumed in Rumania and the sowing of winter wheat for the crop of 1919 was begun at the usual time. But there are several factors that caused the area seeded to be much reduced. In the first place, as has already been noted, the expected expropriation of the land of the large estates discouraged seeding by the landlords, while the land was still not available for peasant cultivation, and further, since the army had not been demobilized, there was a decided shortage of labor. Other factors such as a shortage of draft animals played less important roles (See Appendix).

(1) The crop rotation in Rumania on peasant fields is almost universally an alternation between corn and wheat or corn and some other cereal. As seen from Table 7 the peasants seeded on an average 4,500,000 acres to corn and practically the same area to all other cereals. The area seeded to corn is thus 1,000,000 acres greater than all the land rented by peasants from the great landlords. It is stated on the authority of the Director of Agriculture, Ionescu-Sisesti, that this great area seeded to corn by the peasants is due not only to the peasant's liking for corn but also to the fact that the landlord required that the rented land should be planted to corn, since, as the crop must be hoed, the land was better prepared for winter wheat. In order to get the land the peasant was frequently required to work for the landlord. This meant that his own small plot was seeded late since he must first help to seed the fields of the landlord. He must also get the corn off the land early enough to allow his landlord to sow winter wheat. This meant that the corn was often harvested in an immature condition, reducing the yield and lowering its food value.

The reduction of the areas seeded for the crop of 1919, below the average for 1911-15, is shown by Table 7:

Table 7				
Areas Under Cereals Crops				
1911-15 and 1919				
Areas in Acres (000 omitted)				
Cereal	Large Estates		Small Holdings	
Crops	1911-15	1919	1911-15	1919
Wheat	2,256	842	2,507	2,122
Rye	21	23	221	196
Barley	311	75	1,020	513
Oats	355	98	714	499
Corn	633	207	4,548	4,655
Millet	30	27	82	144
Buckwheat	(1)	(1)	1	2
TOTAL	3,606	1,272	9,093	8,131

(1) Less than 500 acres.

It will be noted from this Table that before the war, wheat, the cash crop, was seeded to about the same extent both by the large operators and by the small peasant farmers, while the peasants seeded over seven times as much corn as the large operators. After the war the first reported crop, that of 1919, shows that the big operators reflected in the area of seeding, the great crisis through which Rumania had passed and the revolution in the agricultural system through which the country was passing. The executive organizations of the large estates had been disrupted by the war, the inventories damaged and the livestock depleted. Since most of the land of the large operators was to be expropriated,

there was little incentive or even possibility of organizing for the campaign of 1919, so the large estates dropped to 35.3 per cent of their pre-war efficiency. On the other hand, the stolid peasant went back to the land and did just as nearly as was possible the same things that he was accustomed to doing before the war, and in spite of the shortage of labor, seeded nearly 90 per cent of the usual pre-war area.

In February and March of 1919 the agents of the Ministry of Agriculture and Domain went out among the estate owners, measured off the amount of land to be retained by them and attempted to rent to the peasants for the account of the State the lands thus hastily expropriated. The measure of their success is indicated by Table 8.

Table 8
Areas Under Cereal Crops
By Groups of Districts
Areas in Acres

District Group and Location	: Large Estates : 1911-15	: Small Holdings : 1919	: Land Uncultivated : in 1919	: Number of peasants : per square mile		
I. E. Moldavia	1,117	323	1,801	1,784	810	287
II. W. Moldavia	193	52	479	454	167	624
III. N. Wallachia	430	152	1,769	1,663	384	572
IV. S. Wallachia	1,624	654	3,858	3,421	1,408	236
V. Dobruddja	242	91	1,186	809	528	236
Total	3,606	1,272	9,093	8,131	3,297	326
Old Kingdom						

By referring to the column under "the number of peasants per square mile", it will be seen that there are two groups of districts in which the population is greatly congested: groups II and III - Western Moldavia and Northern Wallachia, which skirt the Carpathian and Transylvanian mountains. Just as in South Russia, the Boyards, or lords, took the level fertile plains for their own great estates and crowded the peasants off to the lean hill-sides, so here in Rumania the peasantry have been kept crowded up in the lean foothills, while the powerful upper classes have appropriated the rich level lands in the valleys of the Rivers Danube and Prut. There are more than twice as many peasants per square mile in the mountain districts than on the plains, while for the best agricultural development of the country the condition should be just the reverse.

In 1919, out of the land usually seeded to cereals, over 2,300,000 acres on the large estates and nearly 1,000,000 acres on the small holdings, lay idle. Of this idle land 42 per cent was in the great wheat exporting region along the Danube River, where the population was not large enough properly to till the soil and where in the pre-war days much of the crop was seeded and harvested by imported labor. A similar condition also obtained in Eastern Moldavia along the River Prut and in the Dobrudja, between the Danube and the Black Sea. Most of the large estates in these three regions were in the hands of the government in 1921, but, after abandoning its plan to operate the expropriated land through the Cooperative Societies, the estates have been split up into small farms which are being colonized by families, mostly from the congested districts. By the end of 1921 about 2,000,000 acres in the Danube Valley had been assigned to 203,740 families, while 139,743 families received 1,200,000

acres in the Prut Valley. This transfer of more than three million acres of land from estate to peasant farming in districts where wheat was largely produced for export, is bound to affect the future exportable surplus of Rumania. In the congested districts of Western Moldavia 39,770 families received 226,000 acres and in Northern Wallachia 76,435 families received 553,000 acres. There is no report from the Dobrudja. The smallness of the allotment per family indicates that estate farming is being reduced to petty farming, except in those cases where the small parcels of land are to be added to the land already owned by the small farmer.

Taking wheat as an index, we find that even though the acreage in grain in 1919 was much lower than the pre-war average, it was much higher than the acreage in 1920 and 1921. The extremely low acreage of 1,932,000 acres in 1920 was followed by an increase of 937,000 acres for the crop of 1921, but the drop of 366,000 acres in the autumn seeding for the crop of 1922 is perilous following as it does a period of several years with little surplus to hold over. Tables 9 and 10 give a general view of the wheat situation in Rumania, showing the relative importance of winter and spring wheat and the acreage by large and small holdings. Care must be taken in the interpretation of Table 9 as the basic data were incomplete and usually only the autumn seeding and in a few cases only the spring seeding figures are given separately for the large and the small holdings. The figures for the seeding in the autumn of 1921 for the crop of 1922 is taken from a report issued by the Rumanian Department of Agriculture in January 1922. This report is much more favorable than those contained in a preliminary report made in November, 1921, but there is still a shortage of about 2,000,000 acres below the hypothetical normal for Greater Rumania.

Table 9.
Areas Seeded to Wheat in Rumania
by Large and Small Holdings, for specified years

Province and Crop Year	Large Estates (000 omitted)	Small Holdings (000 omitted)	Total (000 omitted)
<u>Old Kingdom</u>	Acres	Acres	Acres
1919	842	2,123	2,965
1920	338	1,594	1,932
1921	518	2,229	2,747
Autumn seeding only			
1922	538	1,843	2,381
Autumn seeding only			
<u>Transylvania</u>			
1920	21	147	168
Spring seeding only			
1921	240	1,373	1,613
Autumn seeding only			
1922	228	1,406	1,634
Autumn seeding only			
<u>Bessarabia</u>			
1902-10	887	1,052	1,939
Average			
1920	29	432	461
Spring seeding only			
1921	73	679	752
Autumn seeding only			
1922	38	436	474
Autumn seeding only			
<u>Bukovina</u>			
1920	2	6	8
Spring seeding only			
1921	7	20	27
Autumn seeding only			
1922	10	27	37
Autumn seeding only			
<u>Greater Rumania</u>			
1921	838	4,301	5,139
Autumn seeding only			
1922	814	3,712	4,526
Autumn seeding only			

Table 10
Areas seeded to Wheat in Rumania
Winter and Spring Seeding, for Specified Years

Province and Crop Year	Autumn Seeding	Spring Seeding	Total
	Acres (000 omitted)	Acres (000 omitted)	Acres (000 omitted)
<u>Old Kingdom</u>			
1919	2,939	26	2,965
1920	1,841	91	1,932
1921	2,747	122	2,869
1922	2,341		
<u>Transylvania</u>			
1920	1,486	168	1,654
1921	1,613	304	1,917
1922	1,634		
<u>Bessarabia</u>			
Average			
1902-10	1,048	891	1,939
1920	950	461	1,411
1921	752	573	1,325
1922	474		
<u>Bukovina</u>			
1907	42	9	51
1920	22	8	30
1921	27	11	38
1922	37		
<u>Greater Rumania</u>			
1920	4,299	728	5,027
1921	5,139	1,010	6,149
1922	4,526		

TRANSPORTATION AND EXPORT POSSIBILITIES

When the armies of the Central Powers evacuated Rumania in 1915, they took with them or destroyed all the food supplies they could find. This left the country in a critical position with regard to provisioning the population. In the first half of 1919 we find Rumania importing foodstuffs as follows: Wheat, 1,625,000 bushels; wheat flour (in terms of wheat) 6,765,000 bushels; rye, 100,000 bushels; corn and corn meal, 600,000 bushels; barley, 20,000 bushels; and oats, 330,000 bushels.

These imports carried the country through until the new crop was harvested, at which time restrictions amounting to prohibition were placed on exports of foodstuffs. The domestic requirements had to be met first, and only such exports were allowed as furthered the interests of the Government, and then only under special permit. Only about 367 bushels of wheat and 80 barrels of wheat flour were allowed to go out of the country. Of the other cereals, 25,000 bushels of corn were sent to Austria, and 718 short tons of meal and grains were exported to Turkey.

These limitations placed on export, with the restrictions imposed on internal trade, with the requirement of a declaration of the stores of cereals on hand, all had a marked influence on the areas seeded to winter wheat in the autumn of 1919. To a lesser extent, transportation difficulties also tended to cut down autumn seeding. The Central Powers left the railways in an almost ruined condition, and it was not possible to move all the stores of grain within the country itself. It is reported that large quantities of corn and other grain spoiled in the hands of the producers. ¹

¹Note: Before the war the Old Kingdom had in round numbers 2,200 miles of

railway, 25,000 cars and 600 locomotives. With the acquisition of her new provinces she increased her railway mileage to 7,500, and her cars to 40,000. Rumania has now 1,325 locomotives, including recent purchases abroad. The rolling stock is not entirely available for transport purposes, since a large part of it is out of repair. To handle her traffic situation effectively, Rumania should have at least 4,000 locomotives and 100,000 cars. Even before the war, the car capacity was not sufficient to move the grain in the fall, and several thousand cars were rented each year from Germany to be used during the period of concentrating the grain.

The effects of these influences on the large operators are shown by the reduction of the wheat acreage on the estates from an average of 2,250,000 acres in 1911-15 to 840,000 acres in 1919, and 230,000 acres in 1920. The peasants, however, were affected to a lesser extent. The pre-war wheat harvest of 2,500,000 acres on small holdings was reduced only to 2,100,000 acres in 1919 and to 1,850,000 acres in 1920. The estate owners were sensitive to economic conditions and governmental restrictions, and in addition were suffering from the expropriation of the land they formerly held. The peasants on the other hand knew little of conditions outside their own villages, and continued in their old habits of life much as in the pre-war period.

The corn acreage of the peasant holdings has increased slightly over the pre-war average, or from 4,547,000 acres to 4,655,000 acres in 1919 and 4,618,000 acres in 1920. On the large estates the corn acreage dropped from a pre-war average of 256,000 to 84,000 in 1919 and 85,000 in 1920. The peasants were obviously providing for their own food supply and taking comparatively little interest in outside affairs.

In 1920, as will be noted from Table 17, the exportation of wheat from Rumania was negligible. In March a law went into effect, which de-

clared all cereals and their derivatives immobilized throughout Greater Rumania. Quantities up to one ton only were permitted to be sold for food or seed, and owners were obliged to report the quantities of each cereal they had on hand. On the 8th of April these restrictions were removed from corn, barley and oats, but wheat and rye were still immobilized. Later the wheat and rye restrictions were removed for a time, in order to stimulate autumn seeding, but were again made effective in December. In the second half of 1920 there was some movement of grain abroad, particularly barley, oats and corn.

The government, alarmed at the small acreage of wheat harvested in 1920, promised export possibilities in 1921, and in the autumn there was a material increase in the seeding of wheat. In the spring of 1921 there was an increased seeding of all cereals. The areas under wheat, rye and corn nearly equalled those of 1919, while barley and oats not only exceeded the 1919 seeding but were above the average for 1911-15, as seen from Tables 11 to 15 inclusive:

TABLE 11

Wheat Production of Rumania
for Specified Years.

Province and Year	Area Harvested Acres (000 omitted)	Total Production Winchester Bushels (000 omitted)	Bushels Per Acre
Old Kingdom:			
Average 1911-15	4,763	85,183	17.9
1919	2,965	50,253	17.0
1920 ⁽¹⁾	1,932	25,723	13.3
1921 ⁽¹⁾	2,869	41,518	14.5
Transylvania			
Average 1910-14	2,352		
1920	1,654	17,396	10.5
1921	1,917	25,761	13.4
Bessarabia:			
Average 1902-11	1,939		
1920	1,411	19,021	13.5
1921	1,325	9,279	7.0
Bukovina:			
1907	51	1,232	24.2
1920	30	431	14.4
1921	38	561	14.8
Greater Rumania:			
1920	5,027	62,571	12.4
1921	6,149	77,119	12.5

(1) Note: For 1920 and 1921 the areas harvested as stated are greater than the areas seeded as stated in Table 10. This discrepancy is not explained, but it does not seriously affect the value of the report.

Table 12.

Rye Production of Rumania for

Specific Years.

Province and Year	Area Harvested Acres (000 omitted)	Total Production Bushels (000 omitted)	Bushels per Acre
Old Kingdom:			
Average 1911-15	242	4,425	18.3
1919	219	3,532	16.1
1920	161	2,127	13.2
1921	179	1,517	8.5
Transylvania:			
Average 1910-14	305		
1920	201	2,267	11.3
1921	342	4,868	14.2
Bessarabia:			
Average 1902-11	522		
1920	369	4,744	12.9
1921	245	2,114	8.6
Bukovina:			
1907	61	1,473	24.1
1920	46	538	11.7
1921	41	524	12.8
Greater Rumania			
1920	777	9,676	12.5
1921	807	9,023	11.2

TABLE 13.

Corn Production of Rumania for

Specified Years

Province and Year	Area Harvested Acres (000 omitted)	Total Production Bushels (000 omitted)	Bushels per Acre
<u>Old Kingdom:</u>			
Average 1911-15	5,181	107,102	20.7
1919	4,862	98,250	20.2
1920	4,666	101,795	21.8
1921	4,600	55,989	12.2
<u>Transylvania:</u>			
Average 1910-14	2,393		
1920	1,012	20,915 (1)	20.7
1921	1,911	23,489	12.3
<u>Bessarabia:</u>			
Average 1902-11	1,739		
1920	1,763	38,159	21.6
1921	1,849	21,237	11.5
<u>Bukovina:</u>			
1907	174	3,698	21.3
1920	154	3,746	24.3
1921	150	2,513	16.8
<u>Greater Rumania:</u>			
1920	7,595	164,615	21.7
1921	8,510	103,228	12.1

(1) This figure for the corn production of Transylvania in 1920 does not check with the corresponding figure in the "Bulletin Statistique de la Roumanie" for 1922, but it does check quite closely with the acreage x unit production figure obtained from the same report.

TABLE 14.

Barley Production of Rumania

For Specified Years

Province and Year	Area Harvested Acres (000 omitted)	Total Production Bushels (000 omitted)	Bushels per Acre
<u>Old Kingdom</u>			
Average 1911-15	1,331	25,931	19.5
1919	587	11,756	20.0
1920	1,224	25,890	21.2
1921	1,753	32,217	18.4
<u>Transylvania</u>			
Average 1910-14	325		
1920	238	4,333	18.2
1921	416	5,203	12.5
<u>Bessarabia:</u>			
Average 1902-11	1,318		
1920	1,857	33,737	18.2
1921	1,628	8,975	5.5
<u>Bukovina:</u>			
1907	72	1,765	24.5
1920	73	1,201	16.5
1921	81	1,224	15.1
<u>Greater Rumania:</u>			
1920	3,392	65,161	19.2
1921	3,878	47,619	12.3

TABLE 15.

Oats Production of Rumania for
Specified Years.

Province and Year	Area Harvested Acres (000 omitted)	Total Production. Bushels (000 omitted)	Bushels per Acre
Old Kingdom:			
Average 1911-15	1,069	27,359	25.6
1919	597	14,166	23.7
1920	1,277	37,300	29.2
1921	1,634	34,516	21.1
Transylvania:			
Average 1910-14	772		
1920	340	5,853 (1)	17.2
1921	724	13,310	18.4
Bessarabia:			
Average 1902-11	179		
1920	488	11,067	22.7
1921	616	5,588	9.1
Bukovina:			
1907	109	3,498	32.1
1920	69	1,590	23.0
1921	88	1,936	22.0
Greater Rumania:			
1920	2,174	55,810	25.7
1921	3,062	55,350	18.1

(1) This figure for the oats production of Transylvania is much lower than the figure given in the "Bulletin Statistique de la Roumanie" but it checks quite closely with the acreage x unit production figure derived from the same report.

Even with the prospect of a good harvest indicated by the increased seeding over the previous year, wheat did not move to any great extent during the first half of the year 1921, although barley and corn were active as shown by the figures in Table 16:

TABLE 16
Cereal Exports From Rumania
First Half of 1921

Quantities in Weighed Bushels. (000 omitted)						
Month.	Wheat.	Wheat Flour in Terms of Wheat.	Rye.	Barley.	Oats.	Corn
Jan.	24	10	264	2,003	827	3,098
Feb.	(1)	88	88	831	417	2,243
Mar.	(1)	79	260	899	283	4,011
Apr.	123	211	90	876	709	5,726
May	288	31	976	1,280	524	1,000
June	288	154	57	1,076	1,176	2,001
Totals	723	573	1,735	7,065	3,936	18,079

(1) Less than 500 bushels.

During this period there were no great governmental difficulties overcome, either in the domestic grain trade or in the export trade. The shipments of corn, rye and barley from Greater Rumania nearly equalled the normal half-yearly export from the Old Kingdom before the war; but, compared with normal shipments the movement of oats was only moderate and that of wheat was insignificant. As the season developed, the country was visited with a prolonged drought, and it became evident that there would be a shortage of wheat for export, and not such an abundance of other grains as had been anticipated. In some parts of Bessarabia the crop was an entire

failure and there were discouraging reports from the Banat. However, no decisive action was taken by the Government to control exports until August 17, when the Government issued a decree providing that all wheat must be held at the disposition of the Government at a fixed price of 18,000 to 21,000 lei per car of 367 bushels. This, at the prevailing rate of exchange was only 33¢ to 36¢ per bushel, while oats, which had not been immobilized was bringing 31¢ per bushel in the open market at the time this decree went into effect. The decree provided that fifty per cent of the crop in excess of the seed and rural food requirements was to be exported. Theoretically 3,400,000 bushels are consumed by the peasants as food and 18,000,000 are required for seed (using the factors of .26 bushels per capita for food and 2.53 bushels per acre for seed, both of which are low). Taking the yield as reputed at 77,000,000 bushels (which is high) there would be thus about 27,000,000 bushels for export. The other 27,800,000 bushels were to be sold within Greater Rumania for the benefit of the urban population at a price far below that warranted by the world market. Thus everyone was to benefit by the wheat crop except the peasant who produced it. However, the urban population requires some 44,300,000 bushels per year for food, which cuts the theoretical surplus for export about 16,500,000 bushels. Also at the fixed government price, wheat was held by the peasants for a better price and did not flood the market. The movement of wheat was barely enough to supply the needs of the cities, and the tendency has been to mill any surplus wheat rather than to ship it abroad as grain.

As will be seen in Table 17 the exports of all grains except rye

were somewhat greater in the second half of 1921 than in the first half of the year, but in all only 3,730,000 bushels of wheat and flour were exported instead of the 27,800,000, provided for in the decree of August 17. In Table 18 the pre-war grain exports are shown for the sake of comparison. It will be seen that the 1921 export of wheat, although large as compared with 1920, was still only about 7 per cent of the pre-war average. Nearly two-thirds as much rye was exported as in pre-war years, while the exports of barley, oats and corn compare favorably with those of pre-war years.

TABLE 17.

Cereal Exports from Rumania

Second Half of 1921

Quantities in Weighed Bushels (000 omitted)						
Month.	Wheat.	Wheat Flour in Terms of Wheat.	Rye.	Barley.	Oats.	Corn.
July	(1)	44	297	2,623	715	4,279
Aug.	221	16	43	2,622	1,045	4,033
Sept.	455	30	14	1,278	495	1,333
Oct.	838	83	15	1,682	1,494	701
Nov.	328	55	51	1,445	2,026	861
Dec.	216	150	44	1,067	1,688	994
Totals	2,058	378	464	10,717	7,463	12,201
1st Half	723	573	1,735	7,065	3,936	18,079
1921	2,781	951	2,199	17,782	11,399	30,280
1920	9	93		19,254	2,436	16,944

(1) Less than 500 bushels.

TABLE 18.

Net Exports of Cereals From Rumania

In Specified Years

Quantities in Weighed Bushels

(000 omitted)

Year	Wheat	Wheat Flour in Terms of Wheat	Rye	Barley	Oats	Corn
1909	31,394	926	2,222	13,107	12,059	28,916
1910	67,343	1,983	5,285	17,809	11,790	23,341
1911	53,386	3,180	5,080	21,712	16,057	60,916
1912	50,219	6,032	2,441	10,797	1,870	42,276
1913	42,261	3,675	2,569	17,143	11,886	38,184
Average	48,921	3,159	3,519	16,114	10,732	38,727
Yields	87,791		4,771	25,907	29,047	106,090
Food Seed and Hold Over	35,711		1,252	9,793	18,315	67,363

Note: During the period 1909-13, as shown by Table 18, the Old Kingdom exported an average of 52,000,000 tons of wheat as grain and flour. During the pre-war period 1911-15 the Old Kingdom shows an exportable surplus of 49,000,000 bushels. This surplus is obtained by employing the pre-war norms of 13.23 bushels of wheat per year per city inhabitant and .26 bushels per year for the rural population and 2.53 bushels of seed per acre, which gives as required yearly, 32,264,000 bushels to meet internal requirements. (Compare this with the yearly seed, food and hold-overs of 35,711,000 bushels as given in Table 18). The average yield of wheat during this period was 81,000,000 bushels. More than half this surplus or about 26,000,000 bushels in 1911-15 was produced in the Southwestern concentration district. Comparing this with the 18,000,000 bushels surplus produced in this district in 1921 it will be seen that this part of the country is only 8,000,000 bushels below its pre-war average. The remainder of the Old Kingdom is about 23,000,000 bushels below its average of 1911-15.

In the early part of 1921, the concentration of wheat at home and its sale abroad was conducted as a Government monopoly. At the same time barley, oats, corn and rye were being concentrated and exported in large quantities by private initiative, the total volume of the movement in these grains being almost equal to the pre-war normal. The Government then sought to regulate this trade, but its agents were not able to cope with the intricacies of Western European markets and the difficulties of shipping. The next move was to organize a special exporting syndicate called the Syndex. This is a stock company, organized under an act passed in September, 1921, with a capital of 500,000,000 lei, (normally \$96,500,000, but only \$1,945,000 at the New York exchange quotation of September 20, 1921). Its membership includes the leading Rumanian banks. It was organized for the purpose of: (a) Financing and exporting the products of the country in accordance with agreements concluded with the Government, and (b) Conducting any other business necessary to the handling of the grain trade. The Government pays all the expenses of the Syndex, and the stockholders receive a percentage on the gross turnover. Private concentration of all cereals, other than wheat was allowed by the Government, but, before these cereals could be shipped abroad the exporter was obliged to turn over to the Syndex at a stated price one half of the grain thus concentrated. This price varied from time to time, but was always much lower than the world market price. The Syndex also financed the cooperatives in concentrating barley, oats, corn and rye. In spite of the activities of the Syndex however, the profit of the private exporter was so great that he could still pay a premium to stimulate the movement of these four cereals. In

Bessarabia when the Government price for wheat was 23 lei per pud (about 35¢ per bushel) buyers paid as high as 45 lei. When the Government price for oats was 25 lei, as high as 37 to 40 lei was offered to get grain in quantities; while 30 to 35 lei per pud (about 48¢ to 55¢ per bushel) was offered for barley. Oats and barley were purchased openly, but wheat with reservation as it has been officially immobilized. As far as increasing the revenues of the Government is concerned the Syndex has not been a great success. The expenses have been high, and it is now thought probable that the Syndex will be disbanded, and that the Government will handle grain exports through a special Government Committee, which will also have charge of the exportation of petroleum and forest products.

The ready market for oats, barley and corn and the comparatively good prices obtained have made them favorite crops with the peasants; while wheat, especially winter wheat in Bessarabia, has fallen in favor on account of the marketing difficulties, the low prices and the inconvenient seeding time. The autumn seeding for the wheat crop of 1922 was very low. The first set of returns from the crop reporters in late November and early December indicated less than 2,500,000 acres in all Greater Rumania. The Government was alarmed at these reports, and to induce the peasants to increase the wheat area, issued a decree on November 29 providing that any peasant producing wheat in 1922 of such a high quality as to weigh 59 pounds or more per bushel, and containing not more than one per cent of foreign matter will not be required to sell at the Government stated price. In 1919 the weight per bushel ranged from 54.5 to 59.7 pounds, with an average of 57.9. In addition to this decree relative to the weight of wheat per bushel, the maximum Government

price was increased from 21,000 to 26,000 lei per carload of 367 bushels (from 35¢ to 44¢ per bushel at the prevailing rate of exchange).

As atated in Table 9 on page 22 the reports in January indicate a total area under wheat of 4,500,000 acres, or more than 2,000,000 acres above the previous estimate. These revised reports were at the time thought to be too optimistic, but other estimates of total wheat acreage tend to confirm the January report. There was every indication of a greatly increased seeding of oats, barley and corn in the spring of 1922. It was estimated, and it appeared very probable, that there would be twice the quantity of oats and barley, and nearly twice as much corn for export from the crop of 1922, as from the crop of 1921. This estimate was based upon the expected acreage to be seeded in the spring of 1922. (1)

(1)

Cable reports from Mr. Michael in October 1922 give the following estimates of the 1922 acreage and yield of the five leading cereal crops of Rumania.

CROP	Estimated Acres (000 omitted)	Estimated Yield (Weighed Bushels) (000 omitted)
Wheat	6,548	87,740
Rye	660	8,900
Barley	4,267	90,710
Oats	3,294	86,130
Corn	8,411	93,810

Before taking up the general influence of the change from large estate agriculture to small peasant farming in the Old Kingdom of Rumania, it is necessary, first, to examine briefly the methods previously employed by the Rumanian peasants and the large operators.

Methods of Agriculture

Corn: Before the war the early ripening varieties of corn were favored in Rumania, because the large land owners wished to clear the fields as early as possible for the seeding of winter wheat. The varieties usually planted were:

1. Yellow Flint. This is a native peasant corn that ripens in 150 days and is the variety generally cultivated.

2. Moldavian or Hangan. This variety ripens two weeks earlier than the Yellow Flint, but the yield is not usually so high.

3. Pignoletto. A Hungarian variety.

4. Szekely. This variety is grown in the mountains and is an early ripening corn.

5. Cinquantino. This is a fifty day corn, and Italian variety with a small flinty kernel. It ripens early and ships well, and is in great demand for export.

6. American Dent Corn. The American varieties have not been developed to meet conditions in Rumania and the varieties planted do not give as large returns of marketable grain as do the European varieties.

In the rotation of crops, corn usually alternates with wheat or some other cereal, but often planted a second year on the same field. Planting takes place late in March or early in April. In Moldavia and Bessarabia the peasants sow corn broadcast upon the unplowed ground and then plow it under. When the corn is about three inches high and the weeds still higher, it is hoed with a semi-circular hoe, the blade of

MEMORANDUM

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FROM : THE CHIEF OF STAFF
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which is about fourteen inches broad by six or eight inches deep. The weeds and superfluous corn are hoed out and the plants left standing are hilled. Sometimes the peasants hoe to a greater depth than they originally plowed, thus severing the horizontal feeding roots and injuring the plants. This deep hoeing and hilling is repeated two or three times during the season. In harvesting, the stalks are cut off short with the hoe and thrown together into rough piles. These piles are removed from the field too early and consequently heat badly. Most of the peasants store corn in some sort of a crib; usually a basket-like affair made of woven saplings and thatched with straw. The same system of culture is employed in Wallachia, with the exception that the corn is planted after the ground has been plowed. Even on large estates very few corn planters are used. In planting, holes are made with a pointed stick at regular distances from one another, and two or three kernels are dropped in each hole.

Wheat: Several varieties of wheat have been developed in Rumania to meet the varied soil and climatic conditions of the country. Local varieties are generally favored, although in a few instances improved varieties of Russian, Hungarian and even German wheat have been sown. The winter varieties belong to *Triticum vulgare*, while the summer varieties are *durums*. Two of the leading varieties of spring wheat are called, 1, Arnut, which is generally seeded in Dobrudja, and, 2, Ghirka, which is sown to a greater or less extent in other parts of Rumania.

In rotation, wheat usually follows corn, although sometimes it follows other grains. When corn is late in ripening, wheat is often

broadcasted among the standing stocks, after which the field is hoed. Otherwise fields are shallow-plowed and harrowed once before seeding. The peasants always broadcast their wheat, while the large operators use the grain drill to a considerable extent. After seeding, the peasants harrow the fields once with a harrow of the brush type. On the large estates, the grain is carefully cleaned, sometimes sorted and treated for smut; but the peasants only superficially clean their grain.

Among the peasants it is a common practice to pasture their stock in the wheat fields in late autumn and winter. In the spring they make little attempt to clean the fields from weeds. The grain is harvested in the full ripe stage. The peasants, and even many of the large operators, cut their wheat with a sickle, but on some of the estates there are a few mowing machines, reapers and binders. On the large estates the grain is bound into sheaves. The peasant sometimes follows this plan, but more often only rakes the wheat together into cocks.

The peasants use no threshing machines of any description, the grain being treading out according to the ancient custom. A circular spot is carefully cleaned in a level place. In the center a tall stake is set up and the ground watered and treading until it is hard packed. When the threshing floor is dry and all the cracks carefully filled, the sheaves are broken and scattered over it to a depth of a foot or so. Then the horses, and sometimes cattle, are attached to the stake by a long halter and are driven around and around. When the halter has wound itself about the stake, drawing the animals to the center of the floor,

they are turned about and driven in the opposite direction. This process is repeated several times, the straw being worked over with a fork. At the end, the straw is removed with a fork and the animals are driven over the now more exposed grain and chaff very slowly to effect the final separation without forcing the kernels into the ground. Then the chaff and grain are swept to the center about the stake with a broom. After this more sheaves are spread about and the process is repeated. The grain is separated from the chaff by tossing it into the air against the wind. A great deal of dirt becomes mixed with the wheat on the threshing floor and this is cleaned out by means of a large sieve suspended from a tripod. At the end of the sieving process the screener gives the sieve a whirling motion that collects a portion of the wild oats, which are always present, in the center. These are removed with the hands. The grain is then ready for marketing. Before peasant grain is milled, it must always be washed.

The peasants have no satisfactory place to store their grain and, therefore, it must be marketed as early as possible. There is a little space under the thatched roof where a limited amount may be kept; but usually the peasants are forced to sell immediately, taking whatever price the buyers offer.

Small Grain Other Than Wheat: Other winter grain is seeded in the same manner as wheat. For spring seeding, the ground is prepared by shallow-plowing in which the furrow is scarcely turned, the soil being simply shoved over the width of the bottom. The field is usually harrowed once, then the seed is broadcasted and harrowed in. There is

no selection or preparation of the seed whatsoever. The varieties of rye and oats are locally developed. Brewing barley, however, was formerly imported from Germany and Austria Hungary, and the seed used is of the same variety as those formerly imported.

The Influence of the Land Reform on Crop Yields.

From the foregoing pages it is apparent that there was no great difference in the yields obtained by the large operators and those of the small peasant holders. The large operators as a class were, from the time they came into actual possession of their estates in 1864, almost entirely dependent upon the peasant, not only for manual labor, but also for draft animals, carts, plows, and other implements with which to put in and harvest the crop. In the Old Kingdom, large estate farming was practically the same as peasant farming. The principal difference was that the crops on the large estates were put in more nearly on time and harvested at more nearly the proper stage of ripening than was the case with the small farmer. Table 19 shows the difference of the average yields on the large estates and on the small holdings.

TABLE 19

AVERAGE CEREAL YIELDS

1911-1915

Bushels Per Acre (1)

Year	Wheat			Rye		
	Large Holdings	Small Holdings	Average	Large Holdings	Small Holdings	Average
1911	20.2	19.0	19.6	18.4	15.0	15.3
1912	18.5	16.2	17.3	16.5	13.2	13.6
1913	22.1	19.6	20.8	19.6	16.3	16.5
1914	10.6	8.5	9.4	10.5	9.3	9.4
1915	21.2	17.1	18.9	18.6	15.3	15.6
Average	18.5	16.1	17.2	16.8	13.8	14.0
Weighted Average	18.4	15.7	17.0			

Year	Barley			Oats			Corn		
	Large Holdings	Small Holdings	Average	Large Holdings	Small Holdings	Aver.	Large Hold.	Small Hold.	Aver.
1911	22.6	20.3	20.9	30.4	24.5	26.4	25.8	20.8	21.5
1912	20.7	16.2	17.2	26.6	20.0	22.0	24.5	19.6	20.2
1913	22.5	18.7	19.6	31.2	24.9	27.2	24.6	21.2	21.6
1914	20.0	17.7	18.1	26.8	22.3	23.7	23.9	19.6	20.1
1915	22.5	20.4	20.9	30.9	25.4	27.3	19.3	16.3	16.7
Average	21.7	18.7	19.4	29.2	23.4	25.4	23.7	19.5	20.0

(1) These figures are reduced from "Quintals per hectare" in the original report. The average bushels per acre does not check with the figures given in Tables 11-15, but is included in order to show the relative differences between the yields on peasant holdings and large estates. - Editor.

The differences in yield indicated in this table are not appreciable except in the case of wheat, and even with wheat there is not such a marked difference between the estate and peasant yields, as we find for example in Bessarabia. Therefore, if there are to be any great changes in the future production of cereals in Rumania, we must look for indications of such changes in the areas of the different cereals habitually seeded by the peasants and the large operators, respectively, before the land reform went into effect. There are many abnormal conditions influencing the areas which are now being seeded. At the end of 1921 out of the 5,500,000 acres to be given to the peasants, 4,000,000 acres have already been transferred to 4,620,057 families, and 1,500,000 acres have been rented. These transfers were not effected early enough in the year to give the peasant opportunity to seed all this newly acquired land, or to know what crops he will plant and the percentage of his holding that he will put into each crop. However, when the transfers are completed and Rumanian agriculture has settled down to its normal routine 16,750,000 acres will be peasant holdings, and 2,600,000 acres will be farmed as estates. Of these peasant lands about 12,800,000 acres will be cultivated, the rest being pastures, orchards, etc. If both the peasants and the large operators follow their pre-war customs each will seed about eighty-three per cent of this land to the five leading cereals, wheat, corn, barley, oats and rye. The peasants will seed to cereals 10,500,000 acres, and the estates 2,100,000 acres, a total of 12,600,000 acres under cereals. The average cereal acreage during the period 1911-1915 was, peasants 9,010,000, and the estates 3,580,000, or a total acreage of 12,590,000. There will thus be no great difference in the

TABLE 20

AREAS SEEDED TO CEREALS BEFORE LAND REFORM--LARGE ESTATES
AND PEASANT HOLDINGS

Cereal Crop	Average 1905-09		Average 1908-12		Average 1911-15	
	Acres	Per Cent	Acres	Per Cent	Acres	Per Cent
Large Estates (000 omitted)			(000 omitted)		(000 omitted)	
Wheat	2,415	58.7	2,443	62.4	2,256	63.1
Rye	46	1.1	45	1.1	21	.6
Barley	347	8.4	346	8.8	311	8.7
Oats	372	9.0	374	9.6	356	10.0
Corn	933	22.7	709	18.1	633	17.7
Totals	4,113	100.0	3,917	100.0	3,577	100.0
<u>Small Holdings</u>						
Wheat	2,125	25.9	2,221	25.8	2,507	27.8
Rye	337	4.1	300	3.5	221	2.5
Barley	1,020	12.4	1,001	11.6	1,020	11.3
Oats	657	8.0	716	8.3	714	7.9
Corn	4,073	49.6	4,379	50.8	4,548	50.5
Totals	8,212	100.0	8,617	100.0	9,010	100.0
<u>All Holdings</u>						
Wheat	4,540	36.8	4,664	37.2	4,763	37.8
Rye	383	3.1	344	2.7	242	1.9
Barley	1,367	11.1	1,347	10.7	1,331	10.6
Oats	1,029	8.3	1,090	8.7	1,069	8.5
Corn	5,006	40.6	5,088	40.6	5,181	41.2
Totals	12,325	100.0	12,533	100.0	12,586	100.0

Note: Percentage totals not justified, i. e. do not in all cases add to 100.

From this Table it will be noted that both the large estates and the peasant holdings had, in pre-war years, established a fairly constant routine in regard to the areas seeded to each of the cereal crops. There was some fluctuation from year to year in the total cereal acreage, but there was remarkably little fluctuation in the relative importance of each crop. As a result of the war and the disorganized economic and social conditions following the war, these agricultural habits have been broken, and today Rumanian agriculture is in a state of flux. Increases and decreases in the areas seeded to the different cereals have followed the many changing and complex factors disturbing normality, which have been traced in the foregoing pages. However, through all these fluctuations in crop seeding there has run a certain tendency to maintain the old order of farming somewhat modified by the new order of land tenure, and, when the peasant settles on his new possessions he is quite certain to conduct his farming in just about the same manner as he did under the old order. This has always been the history of the peasant. In Table 21 the post-war conditions may be compared with the pre-war conditions as shown in Table 20.

TABLE 21

AREAS SEEDED TO CEREALS--LARGE ESTATES AND PEASANT

HOLDINGS AFTER LAND REFORM.

Cereal Crop	1919		1920		1921	
	Acres (000 omitted)	Per Cent	Acres (000 omitted)	Per Cent	Acres (000 omitted)	Per Cent
<u>Large Estates</u>						
Wheat	842	67.7	226	30.3	545	32.6
Rye	23	1.8	4	.5	11	.7
Barley	75	6.0	122	16.3	279	16.7
Oats	98	7.9	183	24.5	303	18.2
Corn	207	16.6	212	28.4	532	31.9
Totals	1,245	100.0	747	100.0	1,670	100.0
<u>Small Holdings</u>						
Wheat	2,122	26.6	1,846	21.5	2,324	24.8
Rye	196	2.5	177	2.1	168	1.8
Barley	513	6.4	994	11.6	1,475	15.8
Oats	499	6.2	954	11.1	1,330	14.2
Corn	4,655	58.3	4,619	53.8	4,067	43.4
Totals	7,985	100.0	8,590	100.0	9,364	100.0
<u>All Holdings</u>						
Wheat	2,965	32.1	2,072	22.2	2,869	26.0
Rye	219	2.4	182	1.9	179	1.6
Barley	587	6.4	1,116	12.0	1,752	15.9
Oats	597	6.5	1,136	12.2	1,634	14.8
Corn	4,862	52.7	4,830	51.7	4,599	41.7
Totals	9,230	100.0	9,336	100.0	11,033	100.0

The first obvious fact shown by Table 21 is that the large estates in 1921 still lacked 480,000 acres of seeding the expected normal cereal acreage, while the peasants were still 1,060,000 acres short. The shortage on the part of the peasants is undoubtedly due to the delay in making their lands available for them. In another year they will probably be well up to their expected 10,500,000 acres. It is, however, difficult to determine just what acreage the peasants will seed to cereals under new conditions. Adding the newly expropriated land to the land which the peasants already owned, the total peasant holdings, exclusive of South Dobrudja, will be 16,750,000 acres. At the end of 1919 the peasant holding amounted to 10,000,000 acres, leaving 6,750,000 acres still to be transferred at that time. During 1920 and 1921, 5,500,000 acres have been transferred to peasant ownership, thus leaving 1,200,000 acres unaccounted for. Of this 1,200,000 acres probably 1,000,000 acres will be eventually seeded to cereals, and this is just about the amount of the peasant shortage in the peasant acreage. It will be noted from Tables 20 and 21 that in 1921 the area seeded to corn was lower than in the two preceeding years. This is probably to be accounted for by accumulated stocks, and since the 1921 yield was poor a greatly increased planting of corn was expected for 1922.

The seeding of wheat on peasant lands after the expropriation does not vary greatly from the pre-war seeding. On the large estates, however, the wheat acreage has taken a sharp drop. After conditions become settled the total acreage will be much greater than the peasants' pre-war acreage, but under the new conditions it is not to be expected that as much land will be seeded to wheat as in the pre-war period.

The seeding of corn on the large estates will almost be as great as that of wheat. In crop rotation on the estates, wheat follows corn. Under the old conditions the peasant, planting corn on the land that he rented from the estate owner, prepared the ground for the wheat crop, consequently the estates planted little corn. If the estates are to continue the production of wheat on the old basis they will be obliged to plant their own corn as the forerunner of wheat. Peasant corn planting, due to the fact that they do not have to plant for the wheat of the estates, will drop more nearly to the level of their own food and seed requirements. This drop will be offset by the increased planting on the estates, and the tendency will be for the combined plantings to return to the pre-war level. The greatest changes in seeding that have developed under the new system are those in barley and oats. The position of these two cereals has been greatly strengthened. How permanent this condition will be it is not possible to judge at present. It will depend to a great extent upon export possibilities. The present proportion of seeding barley, oats and wheat is somewhat artificial, due to conditions that we have discussed in the preceding pages, and when it is possible to export wheat, its relative position will be strengthened, probably at the expense of the areas now under barley and oats. Corn and rye will probably be seeded at about their pre-war percentages.

The Cereal Production of Bessarabia.

During the ten year period 1902-11, Bessarabia produced an average of 79,000,000 bushels of cereals, of which about 9,000,000 bushels were required for seed, and 31,000,000 bushels were consumed within the pro-

vince, leaving a surplus of about 39,000,000 bushels for export. Since this surplus is chiefly wheat and corn, the exportable surplus was by weight, over fifty per cent of the total production. These production and surplus figures are shown in greater detail in Table 22.

TABLE 22

Cereal Production in Bessarabia--1902-11.

Areas in Acres--Quantities in Bushels.

(000 omitted)

Cereal Crop	Area Harvested	Total Yield	Food & Seed Requirements	Exported by Rail & Water	Yield Per Acre
Wheat	1,939	21,366	12,011	9,355	11.0
Rye	522	7,023	3,502	3,521	13.5
Barley	1,318	19,851	11,012	8,839	15.0
Oats	179	4,963	3,629	1,334	27.6
Corn	1,738	25,525	9,948	15,578	14.7
Other Cereals	31	363	(1)	423	11.6
Totals	5,727	79,000	40,000	39,000	13.8

(1) Note: In this table the export figures were taken from the reports of railroad and port officials; while the areas seeded and yields were taken from the records of the Central Statistical Bureau of the former Russian Government. Through some error which could not be traced, the exports of "other cereals" appear as greater than the yield. It is probable that the total yield of these cereals was much greater than reported.

Before the war Bessarabia exported 43.8 per cent of its wheat and 68.1 per cent of its corn. The corn exports were relatively larger

and the wheat exports relatively smaller than in Old Rumania, because of the fact that in this province only about two-thirds of the peasant population used corn as their principal article of diet. After the war there was no detailed crop record until 1920, after the land reform was well under way. It is evident from this report as summarized in Table 23 that the land reform had already greatly influenced the cereal production of this province:

TABLE 23

Cereal Average---Bessarabia.

1902-11 and 1920, Areas in Acres.

Cereal Crop.	Large Estates		(000 omitted) Peasant Holdings		All Holdings	
	1902-11	1920	1902-11	1920	1902-11	1920
Winter Wheat	583	)	465	)	1,939	1,353
Spring Wheat	304	22)	587	1,331)		
Rye	275	4	247	271	522	275
Barley	532	15	786	1,822	1,316	1,837
Oats	127	11	52	270	179	281
Corn	719	9	1,019	1,255	1,738	1,264
Other Cereals	15	1	16	16	31	19
Totals	2,555	62	3,172	4,967	5,727	5,029

The great increase in the peasant seedings in 1920 over their pre-war average is due to the fact that the expropriation problem in Bessarabia was quite different from that in the Old Kingdom where, as has been noted, the peasants were crowded up into the foothills more than a day's journey by rail from the great surplus districts where the largest estates lay. In

Bessarabia, the large estates occupied the plateaus, and were surrounded on every side by the peasants' meager holdings. To occupy the expropriated lands, it was necessary only for the peasants to move in a few miles, not farther than they were in the habit of going every day to their work. So in this province they took possession almost immediately of their new holdings and were able to seed 87.8 per cent of the 1902-11 cereal acreage instead of 74.2 per cent as in the Old Kingdom. In 1921, the Bessarabians seeded 5,800,000 acres to cereals which was 80,000 acres above their pre-war average. This seeding which in a way indicates the future trend of agriculture in this province is summarized in Table 24.

TABLE 24

Cereal Acreage--Bessarabia

1921 Compared with 1902-11.

Areas in Acres (000 omitted)

Cereal Crop	1902-11	Large Estates	1921	Total	Difference
			Small Holdings		
Winter Wheat	1,048	41	424	465	-583
Spring Wheat	891	70	720	790	-101
Winter Rye	) 521)	9	106	115	) -123)
Spring Rye	)	31	252	283)
Barley	1,318	171	1,629	1,800	482
Oats	179	71	643	714	535
Corn	1,739	52	1,552	1,604	-135
Millet & Buckwheat	31	3	33	36	5
Totals	5,727	443	5,359	5,807	80

In 1921, the large operator, who in 1920 was overwhelmed by the expropriation of his lands and by local peasant troubles and took little interest in agriculture, had adjusted himself somewhat to his reverses, and was able to increase his cereal seeding 350,000 acres over the preceding year. The peasant also, who had taken possession of practically his full allotment of new land, increased his cereal seeding 400,000 acres over that of 1920, and 2,200,000 acres over his pre-war average.

The Drop in Winter Wheat Seeding.

The first great difference indicated by Table 24 is under the item of winter wheat, of which the seeding has dropped 563,000 acres. This drop is confined almost entirely to the large estates, indicating that their loss in winter wheat acreage had not been made up by any increased seeding on the part of the peasants, who were scarcely maintaining their pre-war average. On the other hand, the seeding of spring wheat by the peasants has been increased, although not sufficiently to balance the decrease on the large estates. Due to climatic and other conditions, it is very difficult for the peasant to make a success of winter wheat in most parts of Bessarabia, since it is impracticable for him to follow the elaborate methods formerly employed on the large estates to insure moisture enough to mature a profitable crop. It is probable that most of this decrease in winter wheat seeding is permanent, and this means a decrease of approximately 9,000,000 bushels from the exportable wheat surplus of pre-war years, even without taking into account a considerable decrease in the total spring wheat acreage in 1921, a part of which decrease may also be permanent. Since this was the average

amount of wheat exported before the war it is very doubtful if Bessarabia will in the future produce a surplus of wheat for export. In years of deficient yield as in 1921, Bessarabia will be obliged to ship in wheat from the Old Kingdom for its own food requirements. (1)

The 1921 seedings of oats and barley show a great increase. However peasant farming methods will probably lower the average yields per acre of these grains. The whole tendency is toward a general drop in production. Just how far this drop will go, it is impossible to estimate. If the yields are to be no greater than the old peasant averages some rough approximation can be made by a study of Table 25 showing the yields per acre of the various cereals before the war under estate methods and under peasant farming.

(1) In Bessarabia, as already noted in Old Rumania, the agriculture of the large estates centered around the production of wheat for export. Wheat culture had reached a very high stage. Using no fertilizer whatever, the large estates maintained an average winter wheat production of about 15.6 bushels per acre on land which had been farmed for decades--some of it for centuries. This was accomplished through a rigid system of summer fallowing. The land was plowed in May and cultivated after each heavy rain. Wheat was seeded usually during the month of September. On the same quality of land, spring wheat ranged from 7.4 bushels per acre on peasant lands to 8.9 bushels per acre on the estates. Winter wheat following corn averaged, on peasant lands, 11 bushels per acre. Except in the northern part of the province, the peasants have a tendency to seed spring grain, and it is extremely difficult to change their habits. They are primitive, and follow the urge of present necessity and established customs, so it is improbable that wheat culture in Bessarabia will ever recover the loss in area seeded, and certainly the average yield will be lowered nearer to the peasant level than before the war. Also the quality of the product will be of the low peasant standard.

TABLE 25

Cereal Yields on Large Estates and Small Holdings

1902-11

Bushels Per Acre			
Cereal Crop	Large Estates	Peasant Holdings	All Holdings
Winter Wheat	15.6	11.0	13.5
Spring Wheat	8.9	7.4	8.0
Winter Rye	14.8	11.9	13.2
Spring Rye	15.0	12.1	13.7
Barley	19.7	12.8	15.0
Oats	29.8	22.3	27.6
Corn	17.0	13.1	14.7
Other Cereals	11.9	11.4	11.6
Total	16.3	11.8	13.8

Taking the areas seeded in 1921 as an indication of the general trend of Bessarabian agriculture, and the above yields per acre as normal production factors we find that on the remaining large estates the normal production should be approximately (447,000 acres x 16.3) 7,300,000 bushels, and that on peasant land approximately 63,300,000 bushels. This gives a total normal yield of 70,600,000 bushels of all grains under the new condition of land tenure as compared with an average production of 79,000,000 bushels during the ten year period 1902-11. This drop of 8,400,000 bushels is approximately the same as the drop in winter wheat productions alone. Other differences are about balanced by the increased production of barley and oats.

The 1921 Crop Failure in Bessarabia

Although Bessarabia seeded in 1921 about 80,000 acres more than her pre-war average, the yield was about 30,000,000 bushels less than the average yield during the period 1902-11. The actual reports are fragmentary and conflicting, but, over large areas in the central and southern districts of the province, the stand of grain was so scattered that the cattle were turned into graze what they could, as it would not pay to harvest the crop.

The crop reports of the Rumanian Department of Agriculture differ by 15,000,000 bushels from the records on file at the Statistical Bureau in Chisinau (formerly Kishinev). It is impossible to judge as to the relative accuracy of these sets of figures. Both show a deficit for wheat, rye and barley, if we gauge internal seed and food requirements by the pre-war norms of the Rumanian Government. The unpublished Bessarabian statistics also show a 3,700,000 bushel deficit for corn, which is, probably, more nearly correct than the 12,000,000 surplus given in the published reports of the Rumanian Government, as shown by Table 26.

TABLE 26

Cereal Situation in Bessarabia

1921

Quantities in Winchester Bushels (000 omitted)			
Cereal Crop	Production	Pre-War	Difference
		Food & Seed Requirement	
Wheat	9,279	12,011	-2,732
Rye	2,114	3,502	-1,388
Barley	8,975	11,012	-2,037
Oats	5,588	3,629	+1,959
Corn	21,237	9,948	+11,289
Total	47,193	40,102	+ 7,091

In times of crop failure, consumption is cut down to a minimum in districts which normally produce a surplus, except in the cities, which tend to continue as usual until the supply is cut. In spite of the fact that in great cereal producing districts like Akkerman and Ismail not enough wheat was produced to return the seed sown, bread is sold in the cities at only a slight advance and is consumed in normal quantities. It is interesting to note the changes in the 1921 wheat situation in Bessarabia from the pre-war ten year average production in the various districts. The 1921 yields are shown in Table 27 and are from the records in Chisinau.

TABLE 27

Wheat Production in Bessarabia-1921 by Districts.

Quantities in Bushels			
District	1902-11	1921	Difference
Hotin	1,524	1,537	13
Soroca	4,461	1,245	-3,216
Beletzi	2,863	354	-2,509
Orghei	2,072	82	-1,990
Chisinau	1,450	563	- 887
Bendar	2,762	901	-1,861
Akkerman	3,320	872	-2,448
Ismail	2,914	-386	-2,528
Cahul ⁽¹⁾		535	- 535
Totals	21,366	6,475	-14,891

(1) The District of Cahul was not organized as a Zemstvo District under the old Russian Government, so there are no separate figures for its pre-war production.

Of this decreased production of 15,000,000 bushels a decrease of probably 9,500,000 bushels is due to the change in the land tenure system. The remainder of the decrease is due to crop failure. According to the figures as shown in the table above, Bessarabia lacked 5,500,000 bushels of having enough wheat to satisfy its normal food and seed requirements. Crediting this deficit with 900,000 bushels of seed not required on account of the diminished area to be seeded, there still remained a deficit of 4,600,000 bushels. If Bessarabia had maintained its usual wheat consumption it would have been necessary to ship this amount of wheat into the province from Old Rumania. In 1921 only one district, Hotin, produced an average crop of wheat as in this district there was a greater rainfall than in the southern and central parts of Bessarabia.

According to the records at Chisinau, the other cereal crops yielded in 1921 as follows: Rye, 1,880,000 bushels; barley, 9,392,000 bushels; oats, 8,528,000 bushels; corn (exclusive of Hotin from which no report has been received) 6,591,000 bushels. From 2,500,000 to 5,000,000 bushels of oats were exported from the province and some barley was exported, but there were no exports of other grains.

Prospects for the Crop of 1922

The surface of the greater part of Bessarabia was so hard-baked in the autumn of 1921 that the seeding of winter wheat was practically impossible. To a lesser extent, the low maximum price at which the government forced the peasant to sell his wheat acted as a deterrent to autumn seeding. The Government records at Bucharest show that only 474,000 acres were seeded to winter wheat in Bessarabia in the autumn of 1921, as against

752,000 acres in the autumn of 1920 and an average of 1,052,000 acres in the ten years previous to the world war. That is to say, the autumn seeding for the 1922 crop was only 63 per cent of last year's seeding and only 45 per cent of the pre-war average seeding. The great spring wheat districts of Bender, Akkerman and Ismail are in the southern part of the province, where in many places the harvest of 1921 did not yield enough to furnish seed for the spring seeding of 1922. It was therefore necessary to ship seed wheat into these districts in order to seed the normal areas, even without allowing any additional seeding to make up for the prospective winter wheat deficit. The total area under wheat was therefore probably less in 1922 than in 1921.

It was generally reported that the peasants and estate owners were preparing to seed barley and oats more heavily than ever in 1922. They had the seed, and in 1921 there had been more freedom in marketing these cereals. All classes of farmers were skeptical as to the possibility of growing wheat profitably under the Government maximum price system. A heavy planting of corn was also expected since this is the last cereal crop to be put in, and the peasant desired to seed all the land allotted to him in order to prove that he was capable of cultivating it.

The Outlook for the Future

It is the hope of those in charge of the agrarian reform that the change in the land tenure system from large holdings to small holdings, will be accompanied by a change from extensive to intensive agriculture. The peasants both in Old Rumania and in Bessarabia are of the same heritage

and in their present stage of intellectual development, they are inclined to anything but intensive work. Their methods are the most primitive, their implements are crude, and their ideas of the fundamental principles of agriculture are almost childish. These ideas are summed up in their own expression: "As God Wills". In Bessarabia they have always been more at the mercy of chance conditions than have the large operators, and even the large operators, in a country with soil and climatic conditions making possible a yield of from forty to fifty bushels of corn per acre under American methods of tillage, produced on the average only eighteen bushels per acre.

The peasant does not read, and it will be years before he acquires the reading habit. Propaganda for the improvement of agricultural practices must therefore be conducted largely through local demonstrations, and these are too expensive for a Government like that of Rumania to carry on to the extent necessary to produce any appreciable effect upon average yields.

As a direct result of the change from large estate agriculture in Bessarabia to small peasant farming, we may expect that: 1. For some years there will be little or no surplus of wheat for export from Bessarabia. 2. The exports of corn, buckwheat, millet and possibly rye, will be about what they were normally before the war. 3. There will be a greatly increased export of barley and oats. 4. The quality of all cereals will be lower, on the average nearly as low as the pre-war peasant standards.

Note: A special report on Transylvania and a general discussion of the Rumanian grain situation will be published later.

APPENDIX

I

Draft Animals and Machinery

In 1919 the Old Kingdom of Rumania had 20,000 stallions, 198,000 mares, 133,000 colts under three years old. There were 24,000 bulls, 680,000 cows and 600,000 calves under three years old. Although the number of draft animals was but 53 per cent of the pre-war average, more than 76 per cent of the usual area was seeded to crops. An effort has been made to increase the number of draft animals in the Old Kingdom, and horses and cattle have been brought from Transylvania where there is a shortage of feed for the accumulated herds. The number of farm animals in 1919 as compared with the number at an earlier specified period is shown by the following table.

Domestic Animals in Rumania by Provinces in

Specified Years.

Province and Year.	Horses	Cattle	Sheep (1)	Swine
Old Kingdom				
1916	1,218,563	2,937,877	8,051,418	1,402,184
1919	603,075	1,362,744	3,306,327	822,453
Transylvania				
1911	714,954	2,401,654	4,115,141	1,928,595
1919	338,567	1,927,053	2,790,191	1,032,876
Bessarabia				
1916	502,959	725,232	2,213,922	507,446
1919	402,679	662,958	1,699,639	345,778
Bukovina				
1910	70,041	334,443	189,489	219,298
1919	35,595	181,244	100,190	88,351
Greater Rumania				
1919	1,379,916	4,633,999	7,896,347	2,289,458

(1) Includes goats in the Old Kingdom.

The latest statistics on machinery are those of 1905, which, while not giving an indication of recent conditions, show the relative machinery strength of the large and small holdings. In 1905 the large estates had 43,000 plows and the peasants had 475,000, plowing in that year 13,500,000 acres or about 26 acres per plow. There are today more than 600,000 plows in the Old Kingdom. There were only about 13,000 horse-drawn seeding machines on the large estates and some 300 among the peasants before the war. Most of the seeding was done by broadcasting, in which "the peasants were very expert." There were only about 75,000 reapers and binders on the large estates in 1905 and about 11,000 of all types of harvesting machinery in the hands of the peasants. Most of the grain was cut with the sickle, threshed with a flail or treaded out by livestock, and cleaned by tossing up on a windy day.

APPENDIX II

Cereal Acreage Ratios in Old Rumania.

In the graphs on the following page it will be noted that in the pre-war period the relative proportion which the acreage seeded to each of the chief cereals, bore to the total cereal acreage, was very constant. The points on the curves represent five year averages, so the constancy of the ratios is perhaps over-emphasized, but there is nevertheless a decided tendency to seed the different grains in the same relative proportions. Following the break during the period of the World War and the land reform of 1918, we have three more points on the curve, these for individual years, showing how the established ratios among the different cereals were completely upset, particularly in 1920 and 1921.

APPENDIX II

Idle Land in Old Rumania-1919

The accompanying map shows the Old Kingdom of Rumania divided into five groups of districts according to the amount of land left uncultivated after the Land Reform of 1918. It will be noted that in the northern part of Wallachia and in the western part of Moldavia where the land slopes up toward the mountain ranges, and where the peasant population is very dense, there was very little idle land in 1919. But in the great plains and valleys along the Danube and the Prut rivers, where the best land was monopolized by the large estates there was a high percentage of idle land, rising to forty-two per cent just north of the Danube in southern Wallachia.

APPENDIX IV

The Rumanian Wheat Situation

In Maps

In the accompanying series of maps the areas of surplus are heavily shaded, the areas practically self sustaining as to wheat, but with little if any surplus for export, lightly shaded, and the areas of deficit left unshaded. The figures on the map show more closely the balance between surplus and deficit. These figures are percentages obtained by dividing the amount of wheat consumed in each district by the food and seed requirements.

The first map shows the pre-war situation. For the Old Kingdom the figures are based on the average production for the years 1911-15 inclusive, and the population according to the census of 1914. The production for Transylvania is the average for 1911-14 inclusive as shown by the Hungarian Department of Agriculture, that for Bessarabia the average of 1902-11 as given by the Central Statistical Bureau in Petrograd. The production for Bukovina is that of the year 1907. This map shows the two areas of surplus in the Old Kingdom along the Danube and the Prut rivers, extending through Bessarabia, and the two deficit areas in Transylvania and the mountain regions, and in the delta of the Danube.

The second map shows the extension of the deficit area in 1919 through the central part of the Old Kingdom. The third map shows the situation in 1921 with a still greater extension of the areas of deficit both east and west of the normal deficit region. On account of the crop failure in Bessarabia all but a small portion of that province shows a deficit. Only a few districts along the Danube show a surplus comparable to that of pre-war years.